

Patent claims

- Sub A1
1. Particulate composite material, characterized in that it has an average particle size of 20 to 50  $\mu\text{m}$  and contains at most 10 wt.-% particles with a size of < 10  $\mu\text{m}$ .
  2. Particulate composite material according to claim 1, characterized in that it has a maximum particle size of 70  $\mu\text{m}$ .
  3. Particulate composite material according to claim 1 or 2, prepared by curing of a mixture of
    - (a) 10 to 80 wt.-%, preferably 10 to 30 wt.-% organic binder;
    - (b) 0.01 to 5 wt.-%, preferably 0.5 to 2 wt.-% polymerization initiator;
    - (c) 20 to 90 wt.-%, preferably 60 to 88 wt.-% inorganic filler,each relative to the total mass of the uncured mixture.
  4. Particulate composite material according to claim 3, characterized in that it contains as filler quartz, glass ceramic, glass powder or a mixture of these.
  5. Particulate composite material according to claim 4, characterized in that it contains glass powder, preferably barium glass powder and/or strontium glass powder.
  6. Particulate composite material according to one of claims 4 to 5, characterized in that the quartz, glass ceramic and/or glass powder has an average particle size of 0.4 to 1.5  $\mu\text{m}$ , preferably 0.7 to 1.0  $\mu\text{m}$ .

7. Particulate composite material according to one of claims 3 to 6, characterized in that it contains 10 to 50 wt.-%, preferably 20 to 30 wt.-% X-ray-opaque filler.
8. Particulate composite material according to claim 7, characterized in that it contains ytterbium fluoride.
9. Particulate composite material according to one of claims 3 to 8, characterized in that it contains precipitated mixed oxides.
10. Composition, containing at least one polymerizable monomer and/or prepolymer, at least one polymerization initiator and at least one particulate composite material according to one of the previous claims.
11. Composition according to claim 10, characterized in that it contains
  - (i) 10 to 80 wt.-% organic binder;
  - (ii) 0.01 to 5 wt.-% polymerization initiator;
  - (iii) 20 to 90 wt.-% particulate composite filler according to one of claims 1 to 9,each relative to the total mass of the composition.
12. Composition according to claim 10 or 11, characterized in that it contains inorganic filler as a further component.
13. Composition according to claim 12, characterized in that it contains as inorganic filler quartz, glass ceramic, glass powder, or a mixture of these.

14. Composition according to claim 13, characterized in that it contains glass powder, preferably barium glass powder and/or strontium glass powder.
15. Composition according to claim 13 or 14, characterized in that the quartz, glass ceramic and/or glass powder has an average particle size of 0.4 to 2  $\mu\text{m}$ .
16. Composition according to one of claims 12 to 15, characterized in that it contains 25 to 70 wt.-%, preferably 30 to 50 wt.-% quartz, glass ceramic and/or glass powder.
17. Composition according to one of claims 12 to 16, characterized in that it contains X-ray-opaque filler as a further component.
18. Composition according to claim 17, characterized in that it contains ytterbium fluoride.
19. Composition according to one of claims 17 to 18, characterized in that it contains 1 to 10 wt.-% X-ray-opaque filler.
20. Composition according to one of claims 12 to 19, characterized in that it contains a layered silicate as a further component.
21. Composition according to claim 20, characterized in that it contains 0.05 to 5 wt.-% layered silicate.
22. Composition according to one of claims 10 to 21, characterized in that it additionally contains precipitated mixed oxide.

23. Composition according to claim 22, characterized in that it contains  $\text{SiO}_2/\text{ZrO}_2$  mixed oxide.
24. Composition according to one of claims 22 to 23, characterized in that the mixed oxide has a particle size of 200 to 300 nm.
25. Composition according to one of claims 22 to 24, characterized in that it contains 20 to 70 wt.-% mixed oxide.
26. Composition according to one of claims 10 to 25, characterized in that it additionally contains 0.01 to 2 wt.-% additives.
27. Use of a composition according to claims 10 to 26 as dental material, in particular as tooth-filling material, material for inlays or onlays, tooth cement, facing material for crowns and bridges, material for false teeth.

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